NUTRITIONAL CHARACTERISTICS EVALUATION OF MALAYSIAN COMMERCIAL PINEAPPLE CULTIVARS

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To my beloved parents and friends.

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ABSTRACT

Pineapple industry is one of the important agricultural sectors in Malaysia with 76 cultivars planted throughout the country. This study aims to generate useful nutritional information as well as evaluating physicochemical, biochemical and organoleptic properties of 'Josapine', 'Morris', 'Sarawak', 'MD2' and 'Crystal' pineapple (*Ananas comosus*). The pineapple varieties were collected at commercial maturity stage (20-40% yellowish of fruit peel) and the edible portion of the fruit was used as sample for evaluation. From the results obtained, 'MD2' showed highest sweetness and lowest astringency index in terms of physicochemical properties and also had highest content of bioactive compounds, antioxidant capacities and bromelain activity with respect to biochemical properties compared to other cultivars. Furthermore, the highest scores for overall sensory attributes also confirmed the preference of 'MD2' over all the other cultivars. Hence, 'MD2' compared very well with other pineapple cultivars and has great potential in the commercial market. The bioactive compounds were highly and significantly correlated with antioxidant capacities and bromelain activity suggests that these bioactive compounds have contributed to the antioxidant and enzymatic activities of pineapples. All the mean differences observed between the cultivars were statistically significant.

ABSTRAK

Industri nanas merupakan salah satu sector pertanian yang penting di Malaysia dengan 76 kultivar yang ditanam di seluruh negara. Kajian ini bertujuan untuk menghasilkan maklumat nutrisi yang berguna serta menilai sifat fizikokimia, biokimia dan organolepsis nanas 'Josapine', 'Morris', 'Sarawak', 'MD2' dan 'Crystal' (*Ananas comosus*). Kepelbagaian nanas telah dikumpulkan pada peringkat kematangan komersil (20-40% kekuningan kulit buah) dan bahagian buah yang boleh dimakan digunakan sebagai sampel untuk penilaian. Daripada keputusan yang diperolehi, 'MD2' menunjukkan indeks kemanisan tertinggi dan indeks astringen terendah dari segi sifat fizikokimia dan juga mempunyai kandungan sebatian bioaktif, kapasiti antioksidan dan aktiviti enzim bromelin yang tertinggi dengan berkenaan kepada sifat biokimia berbanding kultivar lain. Tambahan pula, markah tertinggi bagi sifat-sifat keseluruhan deria juga megesahkan keutamaan 'MD2' ke atas semua kultivar lain. Oleh itu, 'MD2' berbanding sangat baik dengan kultivar nanas yang lain dan mempunyai potensi besar di pasaran komersial. Sebatian bioaktif korelasi tinggi dan signifikan dengan kapasiti antioksidan dan aktiviti enzim bromelin mencadangkan bahawa sebatian bioaktif memberi sumbangan kepada aktiviti antioksidan dan enzim nanas. Semua perbezaan min yang diperhatikan di antara kultivar adalah statistik yang signifikan.